

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Joseph P. Rynd, *et al.*  
Application No.: 10/722,929  
Filing Date: November 26, 2003  
Confirmation No.: 1182  
Group Art Unit: 1791  
Examiner: Jeffrey Wollschlager  
Title: Method Of Forming Thermoplastic Foams Using Nano-  
Particles To Control Cell Morphology

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Commissioner for Patents  
Mail Stop AF  
P.O. Box 1450  
Alexandria, VA 22313-1450

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Sirs:

This is a Pre-Appeal Brief Request For Review of the final rejections made in the Office Action mailed on November 20, 2008, and is submitted concurrently with a Notice of Appeal. Upon carefully considering the following comments and the arguments of record (all of which are incorporated herein by reference in their entireties), it is believed that the panel will agree that the Office has acted arbitrarily in making the extant rejection without the requisite substantive evidence.

Regarding the rejection of claims 7 and 8 under 35 U.S.C. §112, second paragraph as being indefinite, Applicants respectfully submit that the transitional phrase “consisting essentially of” limits the scope of a claim to the specified materials and those materials that “do not materially affect the basic and novel characteristics of the claimed invention.” (*See, e.g., Manual of Patent Examining Procedure*, Patent Publishing, LLC, Eighth Ed., Rev. 6, August 2007, §2111.03). Thus, it is respectfully submitted that claim 1, from which claims 7 and 8 depend, can include additional features, such as, for example, the addition of additives,

so long as they do not materially affect the basic and novel characteristics of the claimed method. Applicants respectfully submit that the additives claimed in claims 7 and 8 are defined in the application at least in paragraph [0023] as additives for improving the processing or modifying the properties of the foam (*e.g.*, fire retardancy). A fire retardant additive is disclosed in paragraph [0031] as one specific example of an additive. It is respectfully submitted that the claimed additives are not deleterious and do not materially affect the basic and novel characteristics of the method claimed in claim 1. As such, Applicants submit that the claimed additives are permissible claimed features and claims 7 and 8 are sufficiently definite.

In separately rejecting claims 1, 8, and 10-15 under 35 U.S.C. §103(a) as being obvious over WO 2001/39954 to Grinshpun, *et al.* ("Grinshpun") in view of U.S. Patent Publication No. 2005/0027040 to Nelson, *et al.* ("Nelson"); claims 1, 8, 10-12, and 14-15 under 35 U.S.C. §103(a) as being obvious Grinshpun in view of U.S. Patent No. 6,589,645 to Morgenstern ("Morgenstern"); and claims 1, 8, 10-12, 14, 15, and 21 over Grinshpun in view of WO 2003/055804 to Chen, *et al.* ("Chen") and U.S. Patent No. 7,160,929 to Tan ("Tan"), Applicants respectfully submit that the Office has incorrectly interpreted the cited references and has therefore failed to establish proper *prima facie* cases of obviousness.

In particular, Applicants submit that there is no teaching or suggestion within the cited references of a method of manufacturing a rigid foam board as claimed in claims 1 and 21. Grinshpun teaches a foamable composition that is extruded through a die having a plurality of orifices, each of which forms a hollow extrudate. (*See, e.g.*, page 2, lines 19-21 and page 20, lines 22-24). The hollow extrudate is converted into foamed hollow extrudate strands at a temperature that promotes bubble stability. (*See, e.g.*, page 2, lines 22-24 and page 20, lines 26-28). The final step includes permitting the hollow strands to contact and adhere to each other to form a hollow, multi-strand polymer foam extrudate. (*See, e.g.*, page 2, lines 25-28 and page 20, lines 28-31).

Applicants respectfully submit that there is simply no teaching or suggestion of extruding a polymer melt under a second pressure and at a second temperature where the second pressure and second temperature are sufficient to allow the polymer melt to expand and form a foam board as is required in claims 1 and 21. Indeed, the extrusion die in Grinshpun is specifically chosen so that it forms hollow tubes, not a foam board. It is through a coalescing step that the hollow tubes are joined together to form a hollow, multi-strand extrudate. (*See, e.g.*, page 2, lines 14-28 and page 20, lines 28-31 of Grinshpun).

There is simply no teaching or suggestion within Grinshpun of extruding a foam board as claimed in claims 1 and 21. Morgenstern, Nelson, Chen and Tan do not make up for the deficiencies of Grinshpun. Accordingly, it is respectfully submitted that the combination of the teachings of Grinshpun, Morgenstern, Nelson, Chen, and/or Tan would not result in the inventive methods of claims 1 and 21.

In the outstanding final Office Action, it is asserted that the foam sheet produced by the coalescing step is a foam board in accordance with the plain meaning of the term, and as a result, the rejection was maintained. (*See, e.g.*, page 11, lines 3-4 of the Office Action dated November 20, 2008). Applicants respectfully disagree. A “board” may be defined as a “flat piece of wood or similarly rigid material adapted for a special use”. (*See, e.g.*, <http://www.thefreedictionary.com/board>). Foam board insulation is a sheet of rigid foam used in nearly all aspects of building construction to provide thermal resistance. (*See, e.g.*, <http://www.wisegeek.com/what-is-foam-board-insulation.htm>). Accordingly, the term “board” recited in the claims and utilized in the application defines a rigid structure.

As taught at least by Table 1 on page 10 of the application, the foam is extruded by a flat face die/shaper plate or a flat slot die. As one of skill in the art would appreciate, such dies would form solid, rigid foam structures and not hollow tubes as are extruded by the multi-orifice die of Grinshpun. (*See, e.g.*, page 2, lines 19-21 and page 20, lines 22-24 of Grinshpun). It is respectfully submitted that in the present invention, the foam boards of claims 1 and 21 have a rigid foam structure, unlike the hollow tubular structures taught by Grinshpun. Moreover, it is respectfully submitted that the foam “sheet” formed by the coalesced hollow tubes of Grinshpun cannot be a rigid structure, at least partially due to the lack of material within the foam tubes. Indeed, Grinshpun expressly teaches that the hollow foam strands are flexible and compressible. (*See, e.g.*, page 10, lines 17-20). Accordingly, the foam structure of Grinshpun cannot be a rigid foam board as required by independent claims 1 and 21.

In addition, Applicants submit that Grinshpun teaches away from a method of manufacturing a rigid foam board that includes the step of extruding a polymer melt under a second pressure and at a second temperature that allows the polymer melt to expand and form a foam board. As discussed above, Grinshpun specifically teaches the extrusion of a hollow extrudate. (*See, e.g.*, page 2, lines 22-24 and page 20, lines 26-28). As discussed above, a board has a rigid structure. The hollow tubes of Grinshpun are both flexible and compressible. (*See, e.g.*, page 10, lines 17-20). There is simply no teaching or suggestion

within Grinshpun of extruding a rigid foam board. It is therefore respectfully submitted that one of skill in the art reading Grinshpun would be led away from extruding a polymer melt under a second pressure and at a second temperature which permits the polymer melt to expand and form a foam board as is claimed in claims 1 and 21 because Grinshpun fails to teach a rigid structure. As discussed above Morgenstern, Nelson, Chen, and Tan cannot make up for the deficiencies of Grinshpun. As such, it is respectfully submitted that claims 1 and 21 are non-obvious and patentable for this additional reason.

Further, Applicants submit that there is no motivation for one of skill in the art to arrive at the inventions claimed in independent claims 1 and 21 based on the disclosures of Grinshpun, Morgenstern, Nelson, Chen, and/or Tan. As is well established, in order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. (See, e.g., *Manual of Patent Examining Procedure*, Patent Publishing, LLC, Eighth Ed., Rev. 6, August 2007, §2142). It is respectfully submitted that one of ordinary skill in the art would have no motivation to arrive at a method for manufacturing a rigid foam board based on the teachings of Grinshpun and Nelson because Grinshpun specifically teaches the extrusion of a hollow extrudate. Indeed, Grinshpun teaches away from the methods recited in claims 1 and 21. Without some teaching or suggestion, there can be no motivation, and without motivation, there can be no *prima facie* case of obviousness.

Further, because none of Grinshpun, Morgenstern, Nelson, Chen, and/or Tan teaches or suggests a rigid foam board, Applicants respectfully submit that Grinshpun, Morgenstern, Nelson, Chen, and Tan, alone or in any combination, fail to teach all of the claim limitations set forth in claims 1 and 21. Accordingly, it is submitted that a *prima facie* case of obviousness has not been established for this additional reason.

With respect to dependent claims 8 and 10-15, Applicants submit that because independent claims 1 and 21 are not taught within Grinshpun, Morgenstern, Nelson, Chen, and/or Tan and claims 8 and 10-15 are dependent upon independent claim 1, dependent

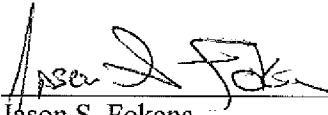
claims 8 and 10-15 are also not taught or suggested by Grinshpun, Morgenstern, Nelson, Chen, and/or Tan.

In response to the rejection of claim 21 under 35 U.S.C. §103(a) as being obvious over Miller in view of Chen and Tan, Applicants respectfully submit that, in order to advance the prosecution of the case and place the claims into condition for allowance, Applicants desire to cancel claim 21 without prejudice.

In summary, Applicants firmly believe that all pending claims are patentably distinguishable over the prior art and should be formally allowed. Upon careful review and consideration it is believed the panel will agree and instruct the Office to issue a Notice of Allowance. Any fees required in connection with this document may be debited to Deposit Account 50-0568.

Respectfully submitted,

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Jason S. Fokens  
Registration No. 56,188

Owens Corning  
Patent Department, Bldg. 21-0  
2790 Columbus Road  
Granville, Ohio 43023  
(740) 321-7351